

### **REMARKS**

The examiner has rejected claim 8 under §112 as "plurality of magnets" lacked antecedent basis. Applicant has amended claim 8 to properly reference "at least one magnet" and the remaining amendments were necessitated by this change from the plural to the singular. Applicant believes the above amendment has traversed the examiner's rejection of claim 8 under §112.

New claims 12 and 13 were added. Both claims are supported by the specification, no new matter has been added.

### **§103 Rejections**

**(a) The examiner has rejected claims 1,3-5, 7, 9-11 under §103(b) as obvious in view of the combination of Dawson and Murphy.**

#### **The Teachings of Dawson**

Dawson shows a magnetic seal having a two piece stator assembly (stationary ring 5 and housing adaptor 4 with a gap 28 therebetween) and a rotor 3. The stator assembly is sealed against the housing by a press fit of the housing adaptor 4 into the housing while the stationary ring is sealed against the housing adaptor 4 by an O-ring. The rotor is sealed against the rotating shaft by an O-ring. Positioned on the rotor in a groove is the sealing ring 10, which forms the seal between the stator assembly and the rotor through action of magnets 14 inserted in holes in the rotor interacting with the magnetic material (ferrous steel) of the stationary ring 5. There is thus a magnetic coupling between the stator assembly and rotor assembly of Dawson.

Dawson indicates that the two piece stator assembly (with a gap between the two pieces) allow for shaft misalignment, as the stationary ring 5 of the stator can tilt to adjust its position with the rotor (Col. 4, lines 49-53). The inner stationary ring thus "floats" with respect to the

housing adaptor 4. Dawson is directed to magnetic closure in concert with flat face sealing. Any other means of closure would render Dawson ineffective.

#### The Teachings of Murphy

Murphy discloses a stator 26 and rotor 60. The stator is sealed against the housing by O-ring 38, while the rotor is sealed against the rotating shaft by O-ring 40. The stator has a protruding circumferential lip 28 which interlocks with a flange 24 positioned on the rotor, and thereby forms a labyrinth seal. The sole coupling between the stator and rotor of Murphy is thus a mechanical coupling.

#### The Combination of Dawson/Murphy

The examiner indicates that Dawson shows a magnetic seal as claimed in Applicant's claim 1, but that Dawson does not teach a "means to mechanically couple the rotor to the stator so that the rotor moves axially independently of said stator for a predetermined range and once the predetermined range is exceeded, the rotor axial movement is coupled to the stator axial movement." The examiner indicates that the interlocking lip/flange of Murphy function as such a means. The examiner then indicates that it would have been obvious to one of ordinary skill in the art to combine Murphy with Dawson to result in Applicant's claim 1.

First, Murphy does not teach allowing the stator and rotor to move relative to one another for a range of motions when assembled. Indeed, Murphy indicates that when assembled, the stator and rotor join "to form an interlocking fit and prevent relative axial movement between the stator 26 and rotor 24." (Col 5 lines 33-35). Second, even if Murphy allowed relative motion between the stator and rotor of only a predetermined range (which it does not), there is simply no incentive to combine Murphy with Dawson. Both Murphy and Dawson are stand-alone sealing devices, Dawson being a magnetically coupled seal, with Murphy being a mechanically coupled

labyrinth seal. There is simply no need nor incentive disclosed in either Dawson or Murphy to combine two types of seals into a single device. The examiner claims that the combination is obvious as the combination "would decrease manufacturing costs and extend the life of the assembly." The examiner is apparently relying on the statement in Murphy that "The unitization of the rotor 24 and stator 26 according to the present invention is accomplished without resort to additional parts or devices. The simplicity of assembly provides for reduced manufacturing costs and extended life of operation of the labyrinth seal assembly." (Col 5, line 66 through col 6, line 3). This statement is directed to reduced costs and extended life for labyrinth seals, not for magnetic seals. There is simply no teaching or incentive in either Murphy or Dawson to combine a first sealing system, the interlocking lip and flange, with a second sealing system, the magnetic seal means, retaining both sealing systems in some fashion, as Applicant has done. Indeed, such a combination results in a more complex and expensive seal than the Dawson magnetic seal standing alone, contrary to the teaching of Murphy. See Declaration of Mike Deweese.

The examiner bears the burden of establishing a *prime facie* case of obviousness. An invention is *prime facie* obvious when the teachings of prior art references can be combined to suggest the claimed invention to one skilled in the art. References can only be combined if there is some teaching or suggestion which would motivate one of ordinary skill in the art to make the proposed modification/combination. Applicant respectfully suggests that the examiner has not met his burden of establishing a *prime facie* case of obviousness for claim 1. Indeed, it appears that the examiner is impermissibly rejecting applicant's claims based upon applicant's teachings in the present patent application.

For the same reason as above, applicant contends that all rejections based upon the combination of Dawson/Murphy fails to make a *prima facie* of obviousness. The examiner's

rejections of claims 3-5, 7, 9-11 based upon this same combination are all based upon the examiner's conclusions that one of ordinary skill would make the combination because it would "decrease manufacturing costs and extend the life of the assembly." As noted above, this statement is insufficient. See In re Sang-Su Lee, 277 F.3d 1338 (Fed. Cir 2002).

**(b) The examiner has rejected claim 2 under §103(a) obvious  
in view of the combination of Dawson and Orlowski**

**The Teachings of Orlowski**

Orlowski shows a stator and rotor mechanically linked seal. The rotor consists of two rings, an exterior ring 24 and an interior ring 62. Exterior ring 24 has a threaded interior extending tail section to which the interior ring 62 is threadably attached to create a single "unitized" two piece rotor. Sandwiched between these two rotor rings (rings 24 and 62) is the stator ring, ring 12. Orlowski thus is a three ring mechanically coupled seal combination, with the stator ring 12 trapped between an inner and outer ring, where the inner and outer ring are threaded together. The Orlowski device is a labyrinth seal, and in normal operation, the stator and rotor do not contact (that is, both lack contact faces). (Col 3, lines 10-15).

**The Combination of Dawson/Orlowski**

The examiner indicates that Dawson discloses a seal having an annular stator and rotor, each with a contact face, and a magnet urging the contact faces together to form a seal. The examiner has indicated that Dawson fails to disclose a "means for mechanically coupling the stator and rotor to allow the rotor to slide along the shaft."

The examiner has indicated that Orlowski discloses a seal having a mechanically coupled stator and rotor, where the coupling includes a third ring 62 that allows the rotor 24 to slide along the shaft. Further, the examiner has indicated that Orlowski teaches that an electric motor's shaft may move axially with respect to the housing when the motor is seeking its magnetic center.

From this, the examiner concludes that one of ordinary skill would combine these two teachings "to allow for axial movement of the shaft relative to the rotor so the shaft can seek a magnetic center without breaking the seal."

Applicant does not believe that one of ordinary skill would combine these references, as there is no incentive to do so. However, even assuming the examiner's conclusion that one of ordinary skill would combine these two teachings, the combination does not produce applicant's invention.

First, one of ordinary skill would not combine these two references, as a combination would destroy the benefits taught by Dawson -- a two piece stator which allows for misalignment of the shaft by allowing the inner stator ring (the stationary ring 5) to float with respect to the outer stator ring, the housing ring 4. Orlowski uses a two piece stator ring, but the two pieces of Orlowski are threadably attached, creating a unitized stator ring. In the Orlowski unitized stator ring, the two stator rings thus lack the ability of allowing one stator ring to "float" with respect to the remaining stator ring. Hence, there is no incentive to combine these two references, as a combination would destroy the benefits taught in Dawson.

Second, even assuming one of ordinary skill would somehow be led to combine these references, this combination does not produce the invention of claim 2. Claim 2 includes a stator, a rotor, each having a contact face, and a magnet urging the contact faces together, and a "means to mechanically couple said stator and said rotor to allow said rotor to axially slide along said shaft." This claim is couched as a "means plus function" claim, which should be interpreted to cover the structure disclosed in the specification (and its equivalents thereof) for accomplishing this means. As indicated in the specification, the disclosed means is an lip/flange configuration between the stator and rotor that interlocks the stator with the rotor. Thus,

applicant mechanically couples the stator with the rotor. Orlowski, however, operates to trap the rotor (or sandwiches the rotor), between two rings that comprise the stator. A modification of Dawson to somehow include Orlowski would not produce the means disclosed by Applicant, an interlocking lip/flange between the stator and rotor.

The examiner bears the burden of establishing a *prime facie* case of obviousness. An invention is *prime facie* obvious when the teachings of prior art references can be combined to suggest the claimed invention to one skilled in the art. References can only be combined if there is some teaching or suggestion which would motivate one of ordinary skill in the art to make the proposed modification/combination. Applicant respectfully suggests that the examiner has not met his burden of establishing a *prime facie* case of obviousness for claim 2.

**(c) The examiner has rejected claim 6 under §103(a) as obvious  
in view of the combination of Dawson and Young.**

**The Teachings of Young**

Young discloses a stator 30 having a series of annular ridges 30b extending axially, adjacent ridges being separated by an annular groove 30a. The rotor 34 also has a series of ridges and grooves that contact and intermate with those of the stator to form a lip seal. The rotor is made of yieldable heat resistant material due to the continual contact between the interlocking grooves/ridges, to eliminate the need to apply grease to the two contact surfaces of the lip seal. Col 3, lines 40-45. Young is thus addressed to face seals that require grease between the contact surfaces.

**The Combination of Dawson/Young**

First, the examiner has indicated that Dawson shows a mechanically coupled stator/rotor. This is incorrect. In the Dawson device, the stator/rotor contact faces are urged together by magnetic forces, not any mechanical coupling. Hence, the Applicant believes the examiner has

failed to present a *prime facie* case of obviousness. An invention is *prime facie* obvious when the teachings of prior art references can be combined to suggest the claimed invention to one skilled in the art. References can only be combined if there is some teaching or suggestion which would motivate one of ordinary skill in the art to make the proposed modification/combination. Applicant respectfully suggests that the examiner has not met his burden of establishing a *prime facie* case of obviousness for claim 6.

**(d) The examiner has rejected claim 8 under §103(a) as obvious in view of the combination of Dawson and Young, and further in view of Pelstring.**

**The Teachings of Pelstring**

Pelstring is directed to a seal for a computer disk drive assembly, and shows a stator that comprises a magnet annulus 22 (shaped like a CD disc) sandwiched between two annular sick shaped pole plates, 21 and 23. Pelstring provides for modifying the pole plates (generally using tabs) to connect to two pole places to provide for physical contact between the plates and hence provide electrical contact between the pole plates for better grounding of the rotor assembly to the housing. The Pelstring device uses no rotor, instead, contact with the shaft is sealing provided by ferrofluids. Pelstring was intended to solve the problem of static electrical buildup on the stator, as the latest generation of disk drives are using heads constructed of magnetoregressive ("MR"), which are highly susceptible to stray electrical charges.

Pelstring also indicates that the desired electrical contact between the two pole plates can be provided using an electrically conductive glue or adhesive. The glue should be positioned on the two sides of the magnet that face the plates, as well as the region 93 across the back of the magnet, thereby providing the electrical path between from one side of the magnet to the other side, and thus provide an electrical path between pole plate 23 and pole plate 21. This

configuration is shown in figure 8 and figure 9 (figure 9 shows only a coating of adhesive on the back of the magnet and a partial coating of adhesive 101 on the sides of the magnet).

#### The Combination of Dawson/Young/Pelstring

The examiner cites the combination of Dawson/Young for the same reasons as claim 6, as claim 8 depends from claim 8. The examiner indicates that the Pelstring shows a magnet positioned in a cavity (the area between the pole plates) and each cavity has an epoxy channel with a bottom that opens into the cavity, and a top portion of larger cross-sectional area (which the examiner identifies as (right side, close to 9) with epoxy positioned in the channel to hold the magnet. The examiner indicates it would have been obvious to combine Pelstring with the Dawson/Young combination to "allow the seal to release stray electrical charges."

The applicant disagrees with the examiner's reading of Pelstring, and disagrees with the incentive to combine.

First, as mentioned above, applicant believes a Dawson/Young combination is improper, and adding an additional reference (Pelstring) does not cure the deficiencies contained in the Dawson/Young combination. Applicant request the examiner withdraw his rejection of claim 8 for the same reason requested for claim 6.

Nevertheless, the applicant, in claim 8 has claimed an epoxy channel with a bottom and top portion, the bottom opening into a cavity holding a magnet, where the top of the channels is larger in cross section than the bottom of the channel. The examiner has indicated that the cavity in Pelstring is the annular space between pole plates 23 and 21. In this case, there is no "channel" for placement of epoxy, much less a channel having a bottom portion which opens into the cavity, and a top portion of larger cross-section than the bottom portion. Pelstring simply shows a layer



of epoxy that is spread on the surface of the magnet. Pelsring is simply lacking the features of applicant's claimed epoxy channel.

Further, the examiner has indicated that one of ordinary skill would combine Pelstring with Dawson/Young "to allow the seal to release stray electrical charges." There is no indication in Dawson that stray electrical charges are a problem. Indeed, Pelstring is directed to solving a problem brought about by using MR materials in computer disk drive heads. There is no use of MR materials in the Dawson device. The Dawson Pelstring devices are directed to different problems - Dawson with shaft alignment; Pelstring with grounding (Young with face seal materials).

For the above reasons, applicant thus respectfully requests that the examiner withdraw his objections based upon 35 USC 103.

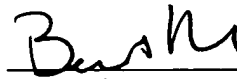
### Conclusions

It is believed that the application is now in a condition for allowance. It is therefore respectfully requested that the Examiner reconsider the rejections made in light of the amendments and remarks presented herein, and that the remaining pending claims be allowed. The undersigned asks that the Examiner contact him at (225) 248-2104 if he has any questions so that early allowance might be reached.

Respectfully submitted,

DATE:

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